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EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 12/04/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,353

Applicant(s)

BOIRE ET AL.

Examiner

Andrew T Piziali

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-30, 34-39, 44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-30, 34-39, 44 and 45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

✓ 1. The indicated allowability of claims 25-30, 34-39 and 44-45 is withdrawn in view of the newly discovered references. Rejections based on the newly cited references follow.

Specification

✓ 2. The applicants are required to insert the following sentence on page 1 of the specification between the title and line 3: -- This application is a continuation of Ser. No. 09/615,910, filed July 13, 2000, and now U.S. Pat. No. 6,326,079, which is a continuation of Ser. No. 09/029,855, filed May 28, 1998, and now U.S. Pat. No. 6,103,363, which is a 371 of PCT/FR96/01421 filed Sept. 13, 1996. --.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

✓ 4. Claims 25-28 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention. The specification fails to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make a titanium oxide coating wherein the crystallized titanium oxide is in the form of crystallites with an average size of between 60 and 100nm. The specification speaks of crystallite sizes of 20 to 30nm (page 24, lines 15-18), obtainable by CVD, but the

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specification does not disclose how to make the crystallites with an average size of, specifically, between 60 and 100nm.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

- ✓ 6. Claims 25, 27, 29-30, 34-35, 39 and 44-45 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,897,958 to Yamada et al. (hereinafter referred to as Yamada).

Regarding claims 25, 27, 29-30, 34-35, 39 and 44-45, Yamada discloses an article comprising a thin film comprising titania at least partially crystallized in the anatase form, deposited on a glass substrate (column 6, lines 40-52, column 7, lines 8-11 and column 8, lines 34-38). Yamada discloses that the film thickness may range from 5 to 100,00nm (paragraph bridging columns 6 and 7).

Yamada does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Yamada, compared with the methods disclosed by the applicants, it appears that the titania film of Yamada possesses a crystallite average size between 60 and 100nm.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and

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prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Regarding claim 27, Yamada discloses that the contact angle with water is below 5° (Table 1).

Regarding claims 34-35 and 44-45, Yamada discloses that the titania film may also contain zinc oxide, aluminum oxide, silver oxide, silicone oxide, zirconium oxide, tin oxide, cerium oxide, tungsten oxide, iron oxide, copper oxide, strontium oxide, and/or barium oxide (column 7, lines 37-41). Yamada discloses that the first component comprises titania particles and that the content of the second component is at least 20 wt% titania with no upper limit (column 7, lines 19-28).

Regarding claim 39, Yamada discloses that the article may be used as a window (column 8, lines 47-57).

7. Claims 25-27, 29-30, 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,721,054 to Vandiest et al. (hereinafter referred to as Vandiest).

Regarding claims 25-27, 29-30, 34-36, Vandiest discloses an article comprising a film comprising titania, which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34). Vandiest discloses that the film thickness ranges from 35 to 90nm (column 3, lines 17-18).

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Vandiest does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Vandiest, compared with the methods disclosed by the applicants, it appears that the titania film of Vandiest possesses a crystallite average size between 60 and 100nm.

Regarding claim 26, Vandiest discloses an absorbent coating layer between the titania film and glass substrate (column 2, lines 18-30). The absorbent coating layer would form a barrier to alkali metals originating from the substrate.

Regarding claim 27, Vandiest does not mention the contact angle with water, but considering the substantially identical article disclosed by Vandiest, compared to the article disclosed by the applicants, it appears that the article of Vandiest possesses a contact angle with water below 5° after exposure to luminous rays.

Regarding claims 34-35, Vandiest discloses that the film comprising titania may also comprise tin oxide (column 4, lines 14-19).

Regarding claim 36, Vandiest discloses an absorbent coating layer between the titania film and glass substrate (column 2, lines 18-30). Vandiest further discloses that the absorbent layer may comprise chromium oxide, iron oxide and cobalt oxide (column 2, lines 52-57).

8. Claims 25-27, 29-30, 34-35, 39 and 44-45 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,604,626 to Teowee et al. (hereinafter referred to as Teowee).

Regarding claims 25-27, 29-30, 34-35, 39 and 44-45, Teowee discloses an article comprising a film comprising titania, which may be anatase crystal structure, on a glass substrate (column 6, lines 36-52, column 7, lines 26-63 and column 8, lines 45-53). Teowee discloses that

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the film comprising titania has a thickness range of about 10 to about 100,000nm (column 8, lines 3-22).

Teowee does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Teowee, compared with the methods disclosed by the applicants, it appears that the titania film of Teowee possesses a crystallite average size between 60 and 100nm.

Regarding claims 26 and 36-37, Teowee discloses that the substrate may comprise a multi-layer thin film structure, which includes a thin coating of fluorine-doped tin oxide with additional undercoating thin film layers disposed between the fluorine-doped tin oxide layer and the underlying glass substrate (column 7, lines 3-17 and lines 53-58). The additional undercoating thin films would form a barrier to alkali metals originating from the substrate.

Regarding claim 27, Teowee does not mention the contact angle with water, but considering the substantially identical article disclosed by Teowee, compared to the article disclosed by the applicants, it appears that the coating of Teowee possesses a contact angle with water below 5° after exposure to luminous rays.

Regarding claims 34-35, Teowee discloses that the film comprising titania may be a composite of several materials including titania and tin oxide or titania and zirconium oxide (column 7, lines 53-63).

Regarding claim 39, Teowee discloses that the article may be used in a vehicular windows (column 1, lines 12-16).

Regarding claims 44-45, Teowee discloses that the titania film may be a composite of titania and tantalum, iron, bismuth and/or cesium (column 7, lines 26-63).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,284,314 to Kato et al. (hereinafter referred to as Kato).

Regarding claims 25-30, Kato discloses an article comprising a thin film comprising titania, with anatase crystal structure, on a glass substrate (column 3, lines 52-65 and column 4, lines 37-48). Kato fails to mention a specific thickness range for the titania film, but the examples disclose the use of a titania film ranging from 300 to 800nm (Examples 1-14). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the titania film, because some applications require more or less oxidizing-reducing activity from the titania film.

Kato does not mention the specific crystallite average size, but considering the substantially identical methods of productions disclosed by Kato, compared with the methods disclosed by the applicants, it appears that the titania film of Kato possesses a crystallite average size between 60 and 100nm.

Regarding claim 26, Kato discloses that the porous ceramic film may comprise a multi-layer film (column 3, lines 25-50). The lower layer(s) of the multi-layer film would form a barrier to alkali metals originating from the substrate.

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Regarding claim 27, Kato does not mention the contact angle with water, but considering the substantially identical article disclosed by Kato, compared to the article disclosed by the applicants, it appears that the article of Kato possesses a contact angle with water below 5° after exposure to luminous rays.

Regarding claim 28, Kato discloses that the surface of the titania film has micropores and further discloses that the diameter of the micropores can be adjusted by changing the amount of polythethylene glycol or polyethylene oxide or the molecular weight thereof (column 4, lines 14-36). Kato does not mention the specific root mean square rugosity of the titania film, but considering the microporous surface of article it appears that the article of Kato would possess such a rugosity by changing the amount of polythethylene glycol or polyethylene oxide or the molecular weight thereof, as taught by Kato.

- ✓ 11. Claims 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of USPN 5,897,958 to Yamada.

Regarding claims 25-30, Kato discloses an article comprising a thin film comprising titania, with anatase crystal structure, on a glass substrate (column 3, lines 52-65 and column 4, lines 37-48). Kato fails to mention a specific thickness range for the titania layer, but the examples disclose the use of a titania layer ranging from 300 to 800nm (Examples 1-14). Yamada discloses that the thickness of a film comprising titania, used for photocatalytic purposes, may range from 5 to 100,00nm depending on the intended application (paragraph bridging columns 6 and 7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the photocatalytic film of Kato from 5

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to 100,000nm, as disclosed by Yamada, because the desired thickness depends on the intended application and the desired oxidizing-reducing activity.

Kato does not mention the specific crystallite average size, but considering the substantially identical methods of production disclosed by Kato, compared with the methods disclosed by the applicants, it appears that the titania film of Kato possesses a crystallite average size between 60 and 100nm.

Regarding claim 26, Kato discloses that the porous ceramic film may comprise a multi-layer film (column 3, lines 25-50). The lower layer(s) of the multi-layer film would form a barrier to alkali metals originating from the substrate.

Regarding claim 27, Kato does not mention the contact angle with water, but considering the substantially identical article disclosed by Kato, compared to the article disclosed by the applicants, it appears that the article of Kato possesses a contact angle with water below 5° after exposure to luminous rays.

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12. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,721,054 to Vandiest.

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Vandiest discloses an article comprising a film comprising titania, which may be in the anatase crystal structure, on a glass substrate (column 2, lines 18-44 and column 3, lines 19-34).

Vandiest does not specifically disclose using the article as a windshield, but does disclose that the article may be used for architectural buildings to provide occupants with protection against solar radiation by reflection and/or absorption and eliminating the dazzling effects of intense sunshine, giving an effective screen against glare, enhancing visual comfort and reducing eye fatigue (column 1, lines 17-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the article as a windshield because protection against solar radiation by reflection and/or absorption, eliminating the dazzling effects of intense sunshine, giving an effective screen against glare, enhancing visual comfort and reducing eye fatigue are all properties desired in a windshield.

- ✓ 13. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,897,958 to Yamada in view of any one of USPN 4,664,934 to Ito et al. (hereinafter referred to as Ito), USPN 5,076,673 to Lynam et al. (hereinafter referred to as Lynam) and USPN 5,202,788 to Weppner.

Yamada discloses a coating comprising titania at least partially crystallized in the anatase form, deposited on a glass substrate (column 6, lines 40-52, column 7, lines 8-11 and column 8, lines 34-38). Yamada discloses that the glazing can be used for windows and mirrors (column 7, lines 47-50), but fails to specifically mention using the coating on an electrically controlled variable absorption glazing. Ito, Lynam and Weppner all disclose (see abstracts) that it is known to use electrochromic devices (electrically controlled variable absorption devices) as windows and mirrors. It would have been obvious to one having ordinary skill in the art at the time the

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invention was made to use the photocatalytic coating of Yamada on an electrochromic device, because Yamada discloses that the photocatalytic coating can be used on windows and mirrors and the secondary references teach that windows and mirrors can be made from electrochromic devices.

Response to Arguments

14. Applicant's arguments with respect to claims 25-30, 34-39 and 44-45 have been considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (703) 306-0145. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5665.



atp
November 26, 2002

Andrew T Piziali
Examiner
Art Unit 1775


DEBORAH JONES
SUPERVISORY PATENT EXAMINER